

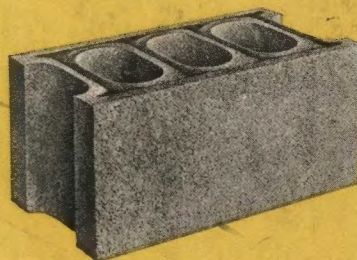


HAYDITE AGGREGATE
is clay or shale
expansively burned at
over 2000° Fahrenheit
—light weight, uniform,
completely cellular
and chemically inert.
(actual micro-photograph)

HAYDITE

The Lightweight Aggregate

BUILDING UNITS



The
**Modern System
of Cost Reducing
“Multiple-Utility”
Masonry
Construction**

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Hydraulic-Press Brick Company
St. Louis, Mo.

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Haydite Building Units Used for Backup and Load Bearing Walls



KALAMAZOO TRUST & SAVINGS BANK, KALAMAZOO, MICH.
Weary & Alford, Architects
Haydite Building Units Used for Backup



VILLA LOCARNO APARTMENTS, KANSAS CITY, MO.
Alonzo H. Gentry, Architect
Haydite Building Units Used for Backup

HAYDITE

The Lightweight Aggregate

BUILDING UNITS

Featuring the Haydite System of
"Multiple-Utility" Masonry Construction that Reduces Costs and
Saves Dead Loads



A Data Book for Architects and Engineers - - - Supplying Information About Haydite Building Units, Concrete, and Pre-Cast Products

For Further Information and Engineering
Service. Write to

Hydraulic-Press Brick Co.

Saint Louis, Missouri

South Park, Ohio

LICENSED HAYDITE MANUFACTURERS

"Multiple-Utility Walls" With Haydite Building Units

**Load Bearing—Backup and Partitions—Plaster Base—Fire Protecting
Insulating—Sound Deadening—Weight Reducing—Cost Saving**

HAYDITE Unit Walls offer a forward step in modern masonry construction because in them all of the major values are combined in *one* material.

Ordinary masonry walls perform the functions of load bearing, backing up for facing materials, and, to some degree, fire protection. The wall built of Haydite Units does all of this too,—and then adds the values of a plaster base, a heat insulation, a sound insulating system, and a base for the direct attachment of trim. Furthermore, in every one of these respects, the Haydite Unit Wall is at least equal, and in most cases superior to ordinary construction.

The advantages of such a system of building are readily seen. It does away with materials having a

single specialized purpose, thus simplifying construction and automatically eliminating a number of serious items of material and labor expense.

But that is not all, for Haydite Building Units offer two important additional benefits: first, an ultimate saving in building costs, and, second, a marked reduction in dead load.

Lower Building Costs

That Haydite Lightweight Building Units measurably lessen the cost of masonry construction is amply demonstrated by the experience of building contractors. The units are large in size, yet surprisingly light, so that they may be handled and laid up with maximum efficiency. In an eight inch wall, a single Haydite Building Unit takes the place of twelve standard brick or more than two standard 5 x 8 x 12 inch hollow clay tile. Thus, there is less masonry labor required and a great deal less mortar. Nailing plugs are unnecessary, for trim may be nailed directly to the Units, and cutting and channelling is simple and easy. Plastering directly on the Haydite Units is an approved practice in exterior walls of eight inches or more in thickness and in all partitions. Here the elimination of furring and lathing is a big item in itself, but to it will be added a saving in plaster and cost of application. Haydite Unit Walls, because of the trueness of the units, require a thinner straightening coat, and as the Haydite surface provides one of the finest plaster bases known, labor expense is reduced.

Because of these numerous advantages, Haydite Unit Walls offer a gratifying saving in cost over other masonry construction—and, in fact, cost little more than wood framing, to which they are infinitely superior.

Reduced Dead Load

In many classes of buildings, the reduction of dead load is a serious structural and economic problem. For this reason, Haydite Building Units have wide use in curtain and partition walls as well as in masonry work where weight is a factor.



ALDRED BUILDING, MONTREAL
Barott & Blackader, Architects

Haydite Building Units Used for Backup and Partitions

Haydite Unit Walls weigh approximately 20% less than hollow clay tile, 40% less than ordinary concrete blocks and 60% less than common clay brick. In fact, Haydite Units provide the lightest of all standard fire-resistant walls.

Superior Construction

Haydite Unit Construction does not merely give a more versatile wall, a lighter weight wall and a lower cost wall—it makes a *better* wall. The units are uniform in strength and accurate in size and shape so that trueness and structural soundness of the wall are assured. The physical properties of the Haydite aggregate guarantee a perfect mechanical bond with the mortar as well as with plaster or stucco. The limited capillarity of the material prevents moisture from penetrating through the unit, and the low heat conductivity virtually eliminates the hazard of condensation on interior surfaces. Plaster cracks are minimized and there is no danger of plaster discoloration for Haydite is chemically inert. Finally, Haydite Building Units are weather-resisting and immune to destructive influences.

Of particular interest is the use of Haydite Units for acoustical correction. For this purpose the interior walls are not plastered, as the surface of the units has almost unequalled sound absorbing properties. The result is a splendid acoustical effect at an actual saving of expense.

Simplicity of Construction

No special design, equipment or methods of construction are needed for the proper use of Haydite



DUPLEX RESIDENCE, GLENDALE, MISSOURI
Nolte & Nauman, Architects
Stucco Applied to Haydite Building Units

Building Units. On the contrary, Haydite Unit Wall Construction is distinctly simpler and easier. The units are flexible in their application and are supplied in a complete range of sizes and shapes to handle any structural problem.

* * * * *

The purpose of this book is to provide Architects and Engineers with complete and concise data regarding Lightweight Haydite Building Unit Construction, together with general information about Haydite and some of its values both for pre-cast products and structural concrete. Further information will be supplied by the Haydite manufacturer in your district, whose experienced engineers are available for consultation on technical problems.

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HAYDITE—the Aggregate

Description of General Properties

HAYDITE is a lightweight *expansively burned* clay or shale aggregate, specially manufactured for use in concrete in place of sand, gravel, stone, or other materials. Its exceptional combination of properties makes it the outstanding material for the production of concrete products, and also for many structural uses.

How Haydite Is Made

HAYDITE is produced from the same raw materials (clay or shale) as are used for the manufacture of high grade brick. The raw material after having been taken from the bank is reduced to a proper fineness and then introduced into a rotary kiln of substantially the type used for the manufacture of Portland cement. The raw material travels progressively through the kiln as it is revolved, passing a preliminary heating stage and finally reaching a zone of highest heat near the discharge end of the kiln. At this point the kiln temperature is in excess of 2000 degrees Fahrenheit. As the material reaches the zone of highest heat it becomes viscous; it reaches a state of incipient fusion; gas is liberated from the gas producing substances contained in the raw material and by this process the material is caused to expand. This process produces an inert



Micro-photograph of Haydite aggregate (fine particles) showing its completely cellular structure. These tiny cells, with their walls of vitrified clay or shale fused at over 2000 degrees Fahrenheit give Haydite its light weight, strength and sound-thermo insulating value.

and light weight material of cellular structure. The expansion is so complete that even the finest particles of the burned material show an ideal cellular structure when magnified. After the material is discharged from the kiln it is reduced, screened and graded into all of the standard commercial sizes used in concrete.

Physical Properties

Haydite is thus composed of a series of tiny air cells, the partitions of which are vitrified at over 2000 degrees Fahrenheit. It is extremely light in weight, and yet has great structural strength. Its cellular nature makes it one of the best heat and sound insulating materials. It is sharp (cuts glass), resists acids and is chemically inert.

Haydite has no combustible content.

Uniformity

The entire manufacture of Haydite, from raw material to screening and grading of the aggregate, ready to ship is under perfect control, assuring a product that is absolutely uniform at all times.

COMMERCIAL SIZES OF HAYDITE AGGREGATE

SIZE		PURPOSE
00"x3/16"	"A"	Sand size—used as fine aggregate in concrete products and general concrete construction.
3/16"x1/2"	"B"	Used as coarse aggregate in pre-cast concrete products.
3/16"x3/4"	"C"	Used as coarse aggregate in heavy pre-cast concrete products and general concrete construction.

Special Sizes of Haydite aggregate for unusual work may be obtained.

Weight of Haydite aggregate ranges from 1100-1600 lbs. per cu. yd. depending in part on the size and moisture content and in part on the district in which it is manufactured. The average shipping weight is approximately 1300 lbs. per cu. yd. Specific information will be furnished by the manufacturer.

HAYDITE Concrete

Description of General Properties

Concrete made with Haydite Aggregate has all of the properties of ordinary concrete, plus a number of advantages which are so important that the product is in rapidly growing demand by architects, engineers, and builders for a large variety of structural uses.

Superior Properties

The following is a condensed summary of the properties of Haydite Concrete:

Light Weight. Haydite Concrete is 30% to 40% lighter than natural aggregate concrete.

Strength. Equal to that of ordinary concrete, as proved by authoritative tests.

Sound-Thermo Insulation. Highest efficiency of any known structural material.

Fire Resistance. Fully established by the National Board of Underwriters and the Bureau of Standards. Haydite Concrete has no combustible content.

Non-Corrosive. Gives full protection to reinforcing bars, steel members, or other embedded metal parts because Haydite is chemically inert.

Durability. Will not deteriorate under severe weather conditions.

COMPARISON OF CONCRETE WEIGHTS

TYPE OF CONCRETE	WEIGHT CU. FT.
Natural Aggregate Concrete.....	145-150 lbs.
Haydite Structural Concrete (Haydite "A" & "C" Aggregate).....	90-100 lbs.
Haydite-and-Sand Concrete (Natural Sand & Haydite "C" Aggregate).....	100-112 lbs.
Haydite Special Insulating and Floor Fill Concrete (All Haydite Aggregate).....	60-75 lbs.

Uniformity. The absolute control of raw material, manufacturing processes and grading of Haydite assures uniformity in strength and all other properties.

Uses of Haydite Concrete

Haydite Concrete is ideal wherever building conditions demand reduction of dead load or the improvement of sound or heat insulation without sacrifice of strength or other desirable concrete qualities. For this reason it offers the logical solution for many structural problems and brings about definite economies both in buildings of reinforced concrete and of steel construction.

In addition, Haydite is employed for a very large variety of pre-cast concrete building products, among which are the following:

- Haydite Masonry and Back-up Units
- Haydite Partition Wall Units
- Haydite Acoustical Wall Units
- Haydite Lintels and Sills
- Haydite Chimney Units
- Haydite Floor Tile Fillers
- Haydite Pre-cast Floor Systems
- Haydite Insulating Roof Tile
- Haydite Bridge Floor Slabs
- Haydite Fireproofing Units
- Haydite Pre-cast Wall Slabs
- Haydite Pre-cast Floor Beams
- Haydite Pre-cast Columns
- Haydite Column Cores
- Haydite Pre-cast Fireplaces
- Haydite Laundry Trays
- Haydite Septic Tanks
- Haydite Decorative Spandrels
- Haydite Cast Stone Products



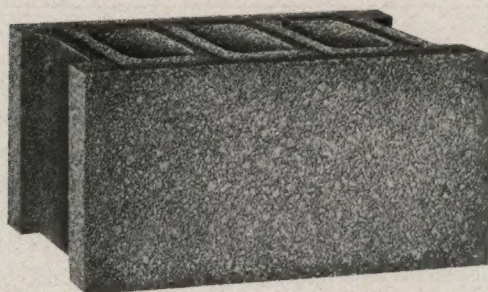
McCANN STORE BUILDING, PITTSBURGH, PA.

Bernard H. Prack, Architect and Engineer

Haydite Building Units Used for all Backup, Partitions, Column Fireproofing and Elevator Shafts.

HAYDITE BUILDING UNITS

Reference Data on Standard Units



12" STANDARD
LIGHTWEIGHT HAYDITE UNIT

Nominal Size.....12 x 8 x 16"
Actual Size.....12 x 7 $\frac{3}{4}$ x 15 $\frac{3}{4}$ "
(Canadian Actual Size.....12 x 8 x 15 $\frac{3}{4}$ ")

Used as a back-up for 16-17" walls, and as an independent unit in 12-13" walls.

Also furnished in Header Units, Jamb and Joist Blocks, Special Grooved Jamb Blocks for Steel Windows, Square End Units, Solid Units and Fractional Units.

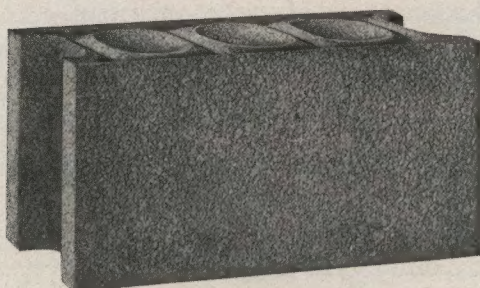


4" STANDARD
LIGHTWEIGHT HAYDITE UNIT

Nominal Size.....4 x 8 x 16"
Actual Size.....4 x 7 $\frac{3}{4}$ x 15 $\frac{3}{4}$ "
(Canadian Actual Size.....4 x 8 x 15 $\frac{3}{4}$ ")

Used as a back-up unit in 8-9" walls and as an independent unit for partitions.

Also made with top almost closed to facilitate spreading mortar, and in Solid and Fractional Units.

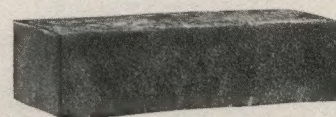


8" STANDARD
LIGHTWEIGHT HAYDITE UNIT

Nominal Size.....8 x 8 x 16"
Actual Size.....8 x 7 $\frac{3}{4}$ x 15 $\frac{3}{4}$ "
(Canadian Actual Size.....8 x 8 x 15 $\frac{3}{4}$ ")

Used as a back-up for 12-13" walls and as independent unit in 8-9" walls.

Also furnished in Header Units, Jamb and Joist Blocks, Special Grooved Jamb Blocks for Steel Windows, Square End Units, Solid Units and Fractional Units.



LIGHTWEIGHT HAYDITE BRICK

Actual Size.....2 $\frac{1}{4}$ x 3 $\frac{3}{4}$ x 8"
(Canadian Size.....2 $\frac{3}{8}$ x 4 x 8 $\frac{3}{8}$ ")

For bonding brick veneer with Standard Lightweight Haydite Units.

LIGHTWEIGHT HAYDITE LINTELS

Widths.....3 $\frac{3}{4}$ ", 5 $\frac{3}{4}$ ", 8"
Lengths.....2' 8" to 10' 8"
Height.....7 $\frac{3}{4}$ "
(In Canada, Lintels are made full 8" high)

NOTE: For 8-9" walls, two lintels 3 $\frac{3}{4}$ " wide are used; for 12-13" walls, two lintels 5 $\frac{3}{4}$ " wide are used.

OTHER SIZES AND SHAPES

In addition to the Haydite Units listed here, there are numerous intermediate sizes (such as 3", 6", 9", 10" and 13 $\frac{1}{4}$ " thick—also 5 x 8 x 12" tile), that are also furnished as standard according to the locality. Units of special sizes or shapes can be furnished to order where necessary.

HAYDITE BUILDING UNITS

Summary of General Information

HAYDITE Building Units are offered in the full range of sizes, styles and shapes required by modern building practice. They are manufactured by a large group of Concrete Products plants, each serving a convenient trade area and all selected for their reliability and efficiency. The units are made in accordance with rigid specifications and by methods supervised by the Haydite manufacturers, which gives full assurance of uniform high quality.

Sizes and Shapes

The standard styles, shapes and sizes of Haydite Building Units are given on the preceding page. Some variations occur in certain territories due to local construction practices, but these are of a minor nature and full information will always be supplied by the local plant. For example, the 8x8x16 in. standard unit is generally made with 40% core space, but in certain districts a new style having as high as 50% core space is now being offered to give increased lightness and economy.

In addition to the standard units, special shapes and sizes can be furnished to meet particular construction problems.

Conformity to Building Codes

In all cases Haydite Building Units are manufactured to comply fully with local building code regulations both as to strength and design. Indeed, they usually offer qualities considerably in excess of code requirements, and thus offer a distinct advance in structural merit.

Weight of Units

The weights of the principal standard Haydite Building Units are:

4 x 8 x 16"—13-17 lbs.

8 x 8 x 16"—26-30 lbs.

12 x 8 x 16"—37-45 lbs.

2¼ x 3¾ x 8" (Haydite Brick)—3¼ lbs.

NOTE: 8x8x16" Units with 50% core space weigh 22-25 lbs.

The variations given are principally due to the fact that the shapes of the units and their proportions of "void" or core space differ according to locality. The definite weights which apply in your district will be supplied by the local manufacturer.

Superior Features

Among the many advantages of Haydite Building Units are: (1) lighter weight, (2) great strength,

(3) fire resistance, (4) economy of laying, (5) high thermal insulation, (6) sound insulation, (7) damp-proof, (8) exceptional acoustical properties, (9) splendid plaster and stucco base, (10) nailability, (11) easy channelling and cutting, (12) durability, (13) non-corrosive, (14) uniformity. Full information regarding these qualities is presented on the following pages.

Uses of Haydite Building Units

Lightweight Haydite Building Units, because of their unique combination of properties, offer the most desirable method of masonry construction for all classes of buildings from residences to skyscrapers. They are used with equal advantage in load-bearing and curtain walls, in partitions and in all types of permanent construction. They are of particular value for backing up face brick, stone, etc., and for a plaster and stucco base. They can be used to excellent effect for interior unplastered walls, especially where sound reduction is desired without extra cost. Methods of construction are described on following pages.



ILLINOIS WESLEYAN SCHOOL OF MUSIC, BLOOMINGTON, ILL.
Lundeen, Hooton, Roozen & Schaeffer, Architects
Haydite Building Units Used for Backup and Partitions

Properties of Haydite Building Units

LIGHT WEIGHT

Lightness in weight is one of the most striking merits of Haydite Building Units. This is of advantage in two ways: first, because it makes the units easier to handle and quicker to lay up in the wall, and second, because it brings a great reduction in dead load. This is doubly important when you remember that, in Haydite Unit construction, the lowering of wall weight is accomplished without sacrifice of load bearing capacity, fire safety, or other necessary properties.

An 8" masonry wall ($\frac{1}{2}$ " mortar joints) will weigh 35.81 lbs. per square foot if built of Haydite Building Units as compared with 45.6 lbs. for hollow clay tile, 61.25 lbs. for ordinary concrete block, 100 lbs. for natural aggregate monolithic concrete, and 87.2 lbs. for common brick. Thus, Haydite Units give by a wide margin the lightest masonry wall and this feature alone justifies their use entirely aside from their other economies.

Attention is called to the fact that this reduction of dead load is accompanied by a material saving in the amount of mortar used. Thus in 100 square feet of 8" wall, Haydite Building Units (8 x 8 x 16") will require only $5\frac{1}{2}$ cubic feet of mortar for $\frac{1}{2}$ " joints as compared with approximately 8 cubic feet for clay tile (5 x 8 x 12") and 20 cubic feet for clay or shale brick. This fact, together with the ease of handling the light units, enables a con-



SUN LIFE ASSURANCE COMPANY, MONTREAL
Darling & Pearson and A. J. C. Payne, Assoc. Architects
Haydite Building Units Used for Partition Walls

siderable saving in speed and cost of laying up the wall.

An interesting comparison of wall weights is given below. In reviewing this data please note that the weight for Haydite Unit Walls depends a good deal upon the percentage of core space in the block,—a thing which varies according to local building code regulations. As a rule, the 8 x 8 x 16" unit will have 40% core space, but in some localities this may be increased to as high as 50%, with a corresponding reduction of weight. The local manufacturer will supply full information.

TYPICAL COMPARISON OF WALL WEIGHTS

Showing the large saving in dead load made possible through Haydite Building Unit construction. The data shown applies to 100 square feet of 8" wall. The commonly accepted weights of masonry materials have been used, and Portland Cement mortar has been figured at 150 lbs. per cu. ft.

Type of masonry units used in construction	Weight of masonry units only	Weight of mortar required for $\frac{1}{2}$ " joints	Total Wall Weight	Weight per sq. ft. of 8" wall	Saving for Haydite Unit Construction
HAYDITE Building Units (8x8x16") 106 @ 26 lbs.	2,756 lbs.	825 lbs. ($5\frac{1}{2}$ cu. ft.)	3,581 lbs.	35.81 lbs.	
Hollow Clay Tile (5x8x12") 210 @ 16 lbs.	3,360 lbs.	1,200 lbs. (8 cu. ft.)	4,560 lbs.	45.60 lbs.	Haydite Units save 21.5%
Ordinary Concrete Blocks (8x8x16") 106 @ 50 lbs.	5,300 lbs.	825 lbs. ($5\frac{1}{2}$ cu. ft.)	6,125 lbs.	61.25 lbs.	Haydite Units save 41.5%
Common Clay Brick (8x2 $\frac{1}{4}$ x3 $\frac{3}{4}$ ") 1,271 @ 4 $\frac{1}{2}$ lbs.	5,720 lbs.	3,000 lbs. (20 cu. ft.)	8,720 lbs.	87.2 lbs.	Haydite Units save 58.9%

Note: A thinner mortar joint than specified above will, of course, alter the result, but this will favor Haydite more than other materials. There will also be some local variations in the weights of the masonry materials and where these occur, the above figures can be adjusted accordingly.

Properties of Haydite Building Units

FIRE RESISTANCE

The fire resistance offered by Haydite Building Units has been completely established both by official tests and field experience. It is natural that Haydite products should excel in this respect, for the aggregate is made of high grade clay or shale which is thoroughly vitrified, chemically inert and, because of its cellular composition, an ideal heat insulator. Always remember that *Haydite products have no combustible content.*

Underwriters' Laboratory Tests

The National Board of Fire Underwriters, at the Underwriters' Laboratories, have made complete fire tests on Haydite Units in 8" load bearing walls, according to their standard specifications. Excerpts from their official report, known as Retardant No. 2309, dated September 4, 1930, are as follows:

Heat Insulation: "The heat insulating properties of 8" walls assembled from 8 x 8 x 16" hollow units are such that the critical temperatures on the exposed face defined by the Standard Fire Test Specification are not reached in less than three hours."

Spalling: "There is no appreciable tendency to spalling of the exposed faces of the units as a result of exposure to the Fire Endurance, Fire-and-Fire-Stream, or Excess Load Tests."

Strength: "The compressive strength of the units is in excess of the 700 lb. average and 600 lb. minimum specified in the Standard. An 8" wall built up of the units has adequate load bearing value."

Stability of Walls: "Eight-inch walls carrying their rated loads retain their stability during exposure to severe fire for the entire time indicated by the three-hour classification."

Aggregate: "Exposure to the standard test conditions indicates no abnormal heat conductivity, expansion, contraction, cracking, spalling, fusion, erosion or other disintegration of the units due to their HAYDITE content."

Summary: "The tests and examinations reported herein indicate that HAYDITE Building Units, 8 x 8 x 16", made in accordance with the specifications contained in this report, when assembled into walls eight inches thick and with the usual limitations of height and unbraced area may be classified as 3-hour load bearing walls."



Photo of Avalon Country Club, Indianapolis, after severe fire in upper story. In spite of the intense heat, the Haydite Unit Walls were in perfect condition, without spalling, cracking or bulging.

Department of Commerce Rating

It is of particular interest to note that the U. S. Department of Commerce Building Code Committee has just published a report entitled "Recommended Minimum Requirements for Fire Resistance in Buildings." In this, a three-hour rating is given for 8 in. unplastered walls of burned shale (Haydite) units with shells 1 1/2 in. thick—although for blocks made of ordinary concrete or for concrete having a combustible content in the aggregate a shell thickness of at least 2 in. is required. In addition, this report gives a four-hour rating to walls composed of 4" Haydite Units faced with 3 3/4 in. of brick and plastered inside.

Other Tests

A test recently made at the University of Kansas produced the following result:

"A block of (solid) HAYDITE concrete about 8" x 8" x 6", together with a block of limestone concrete, were placed in a furnace and the temperature gradually raised to 1800 degrees Fahrenheit, where it was held for a period of five hours. After cooling, the specimens were removed from the furnace and examined. The concrete specimen crumbled to pieces, possessing no strength. The HAYDITE specimen was tested in compression and carried a load of 1,337 pounds per square inch at failure."

Other tests, as well as actual performance under severe conditions, fully attest that Haydite Building Units offer a thoroughly fire safe construction.

Properties of Haydite Building Units

THERMAL INSULATION

HAYDITE Building Units provide the greatest degree of heat insulation of any masonry material. The minute air cells of which the aggregate is composed offer extreme resistance against the passage of heat. As a result the thermal insulating value of Haydite Concrete is far above that of any comparable substance.

The coefficient of heat conductivity for Haydite concrete of 74 lb. density has been established by The Thompson & Lichtner Co., Inc., engineers, at 1.82 B.T.U. per hour, per sq. ft., per inch thickness, per degree of temperature differential, and a similar test by the University of Toronto gives a coefficient for 90 lb. Haydite Concrete of 2.24 B.T.U. Compare these with the recognized coefficients of other masonry materials and a substantial difference in favor of Haydite will be seen.

However, a comparison of wall conductivities is even more to the point for the design of Haydite Building Units adds still more to their insulating value. Due to the many methods by which such data can be computed, it is important to make sure that data actually is comparable. Such a group of data, covering the conductivities of unplastered 8" masonry walls, is given below.

Thus heat loss through the wall is reduced to a minimum, substantially reducing fuel bills. Furthermore, experience has shown convincingly that



RESIDENCE, KANSAS CITY, MISSOURI
Edward Tanner, Architect
Haydite Building Units Used for Backup

changes in the outside temperatures affect a wall of Haydite Units very slowly and that the danger of condensation of moisture contained in the air of the heated interior is eliminated almost entirely.

No Special Insulation Needed

When buildings are constructed of Haydite Building Units, there is no need for special insulating materials, for Haydite is both a structural material and an insulation. This permits an important saving in cost, with assurance of warm interiors and low heating expense.

COMPARATIVE HEAT CONDUCTIVITIES OF 8 INCH MASONRY WALLS (Unplastered)

The following data was developed by J. C. Peebles, M. E., of the Armour Institute of Technology, Chicago, and shows the conductivities of various types of masonry walls, all obtained under identical test conditions. The rate of heat flow through the various samples was obtained by the Flat Plate method, which gives the internal coefficient of heat conductivity, surface to surface.

Material Tested	Size of Units	Description	Internal conductivity, B. T. U. per hour for total thickness of 8" wall
HAYDITE BUILDING UNITS.	8 x 8 x 16"	Standard Units	0.30
Hollow Clay Tile.....	5 x 8 x 12"	3-cell, 5/8" shell x 1/2" web	0.39*
Hollow Clay Tile.....	5 x 8 x 12"	2-cell, 3/4" shell x 5/8" web	0.49*
Hollow Clay Tile.....	5 x 8 x 12"	2-cell, 5/8" shell x 1/2" web	0.55
Common Brick.....	2 1/4 x 8 x 3 7/8"	Standard hard brick	0.65

*Data from Handbook of the American Society of Heating & Ventilating Engineers.

Properties of Haydite Building Units

SOUND INSULATION

The elimination of sound transmission from room to room is receiving increasing attention in apartment buildings, office buildings, hospitals, hotels, schools and many other classes of structures. Here, again, the unique cellular nature of Haydite solves an important problem, for authoritative tests have demonstrated that Haydite Unit partition walls afford a greater degree of sound insulation than those built of any other comparable material.

To quote Dr. Sabine of the Riverbank Laboratories, whose test data is given below, "Haydite Partition Units show the greatest number of sensation units in sound reduction of the five leading types of partition materials such as hollow clay tile, gypsum tile, plaster on metal lath, and plaster on wood lath and wood studs. Conversational speech can be faintly heard but not understood, and the sound of a phonograph is almost completely extinguished through the Haydite partition."

No Special Materials Needed

The sound insulating properties of Haydite partition walls are especially advantageous because they eliminate the need for special insulating



BELL MEMORIAL HOSPITAL, KANSAS CITY, KANSAS

Chas. Cuthbert, Kansas State Architect

Sound Insulating Haydite Unit Partition Walls

materials which are always costly and are not infrequently unsatisfactory from the standpoint of fire safety. The Haydite Building Units, a simple masonry material, shuts out sound at a big saving in cost and without the necessity of special engineering or complicated systems of wall construction.

COMPARATIVE DATA ON SOUND INSULATION FOR PARTITION WALLS

The following data was obtained through tests by Paul E. Sabine, Ph. D., of The Riverbank Laboratories, Geneva, Illinois, well known authority on acoustics and sound insulation. In explanation of the test, he states: "In order to arrive at conclusions that should be sound these tests cover the whole range of frequencies from 128 to 4,096 vibrations per second and from 128 to 1,024 vibrations per second. In order to express the results of these tests by a single numerical value, the standard practice of taking the average has been adopted. These average values for the various partitions tested are taken as the measure of their relative sound insulating merits."

Type of Wall Construction	Weight per Sq. Ft.	Average Reduction 128-4096	Average Reduction 128-1024
3" Solid Gypsum Tile and 1 1/4" Gypsum Plaster	25.4	34.3	32.6
3" Hollow Gypsum Tile, unplastered	11.1	24.0	22.3
4" Clay Tile and 1/2" Gypsum Plaster	22.0	32.0	30.8
4" Clay Tile and 1" Gypsum Plaster	27.0	35.0	33.6
2 1/2" Gypsum Plaster on Metal Lath	23.2	33.3	30.5
3 1/2" Gypsum Plaster on Metal Lath	32.5	36.1	34.3
2 x 4" Wood Stud, Wood Lath, plastered	18.0	29.4	28.0
4" HAYDITE Partition Unit and 1" Gypsum Plaster	23.2	38.0	36.1
8" HAYDITE Building Unit and 1" Gypsum Plaster	43.5	40.1	37.2

These tests were conducted by what is known as the Reverberation Method developed by Professor Wallace C. Sabine and used in the above laboratory in the study of the general problem of sound transmission in partition construction. The results show that HAYDITE Partition Units have the greatest insulating merits of the five leading types of partition materials tested.

Properties of Haydite Building Units

WALL STRENGTH

HAYDITE Building Units, as manufactured by the various authorized concrete products plants fully meet, and in most instance considerably exceed the strength requirements of local building codes. Special strength can be obtained by varying proportions of Portland Cement and Haydite Aggregate in the manufacture of the units. The manufacturers of Haydite have absolute control over the preparation and grading of the aggregate, and the units are subjected to tests at regular intervals as a guarantee of uniformity. Thus, Haydite Building Units offer the minimum weight combined with the requisite strength for load bearing walls.

Factor of Safety

Tests of pilaster strength under eccentric loading which were recently completed at the Engineering Experiment Station of Ohio State Uni-

TYPICAL COMPRESSION TEST				
Made at the University of Wisconsin College of Engineering on standard 8 x 8 x 16" Haydite Building Units.				
Block No.	Weight, lbs.	Area, sq. in.	Total Load, lbs.	Stress, lbs. per sq. in. Gross Area
4	26.7	127.2	130,580	1,030
5	26.7	127.6	118,720	930
6	27.9	127.2	118,870	935
Av.				965

NOTE: The above tests were made on Haydite Building Units manufactured to satisfy building code requirements of 700-800 lbs. per sq. in. Where codes require 1,000 lbs. strength, the Haydite Units will usually show a test average of 1,200-1,300 lbs. per sq. in. gross area.

versity demonstrate that Haydite Building Units have an average factor of safety at least equal to that of common clay brick or the ordinary hollow clay tile. The complete report of this data, as well as other similar material, is available upon request.

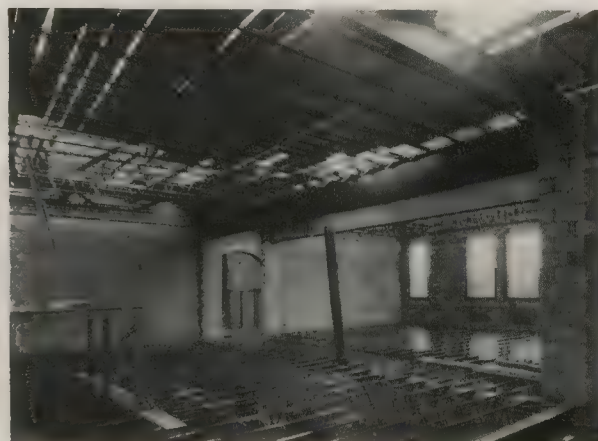
Heavy Load Bearing Columns

For columns and pilasters subject to extremely heavy loads, the use of solid Haydite Units is recommended. Such units are available in all standard sizes, and in special sizes when necessary.



ALCAZAR HOTEL, KANSAS CITY, MISSOURI
Edgar Farris, Architect

Stucco and Plaster Applied to Haydite Building Units



View of Ft. Wayne, Indiana, Church during construction. Note the heavy steel beams supported by Haydite Building Units

Properties of Haydite Building Units

AGE PROOF

The durability of Haydite Building Units may be judged from the results of numerous Freezing and Thawing Tests that have been made. In one such test, made by the University of Wisconsin, 100 alternate freezings and thawings were made. After being frozen solid, the specimens were placed in a tank of water with a temperature of 140 degrees Fahrenheit for a one-hour thawing period. This constituted one reversal. *After 100 such freezing and thawing reversals, the specimens tested actually increased in compressive strength from 801 lbs. to 967 lbs. per sq. in.—a convincing demonstration of permanence.*

LOW BREAKAGE

There is nothing brittle or fragile about Haydite Building Units. On the contrary, they are exceedingly tough and durable, and as a result, breakage experienced in handling, trucking and shipping is reduced to a minimum. This affords a saving that should be taken into consideration when figuring material estimates and construction costs.

NAILING

A substantial economy in construction results from the fact that wood trim can be nailed directly to the Haydite Building Unit. This eliminates the necessity of nailing plugs, nailing strips, etc., permitting a worthwhile saving in both labor and material. Nails driven into the block will not loosen, but hold as firmly as in a hard wood base. Furthermore, there is no danger of rusting to the nails, for Haydite is free from any chemical substances that could cause corrosion.



From a practical building standpoint, the nailing feature is one of the most attractive points in favor of Haydite Unit Construction.

DAMP PROOF

Haydite construction assures dry interiors for two reasons. First, Haydite concrete has very low capillarity and therefore does not draw moisture through the wall, a fact which can be seen from the illustration below. Second, due to their high insulating value, Haydite Building Units eliminate condensation, as the temperature of the wall is slow in changing, allowing the moisture to remain suspended in the air. Haydite wall construction thus safeguards plaster and decorations, and insures freedom from unhealthy dampness in basements and other portions of the building.

Photograph of Haydite Building Unit after 24 hours immersion in water, showing low capillarity.



CHANNELING

Another advantage of Haydite masonry wall construction is ease of channeling. The units may be readily cut and channeled to receive pipes for plumbing or conduits for electrical wiring. This operation is not only economical in point of time consumed, but—what is equally important—does not endanger the wall, for cutting can be done without fear of shattering the units. No special equipment or skill is required.



Note the perfect condition of the units after channeling.

Properties of Haydite Building Units

PLASTER & STUCCO BASE

The surface texture of Haydite Building Units offers an ideal base for the application of plaster or stucco. The slightly roughened surface causes particles of plaster or stucco to dovetail into the face of the unit providing an excellent key or mechanical bond, and the uniform suction or absorption not only permits the plaster to harden to a uniform color throughout, but holds it permanently and permits proper seasoning.

With exterior wall units of 8" or more in thickness and in all partitions, plaster may be applied directly to the unit, thus saving furring and lathing.

Hundreds of experiences have shown that the unique properties of Haydite Units, coupled with good masonry construction makes plastering directly on the units a sound practice, and permits a cost reduction that is extremely attractive.

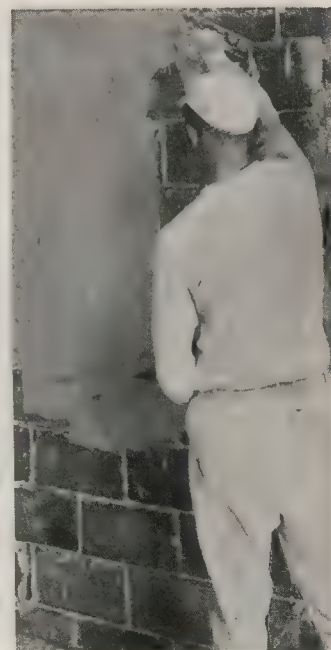
Saving in Plaster and Labor

In addition to other economies, Haydite construction reduces the amount of plaster needed. A wall of Haydite Units is so true that only a very thin straightening coat is usually required. This, together with the quick, uniform adhesion of plaster to the Haydite surface effect a reduction in labor which is a considerable item.

Consider, too, that there is nothing in the chemical composition of Haydite which can discolor or affect plaster and stucco in any way.

Elimination of Cracks

A further advantage pertains to the elimination of cracks. The Haydite Unit Wall, with its low heat conductivity and structural stability, does not subject plaster and stucco to severe expansion or contraction strains, and thus reduces the danger of cracking to a minimum, saving expensive repairs.



Haydite Units eliminate the expense of furring and lathing, and also reduce labor costs. The Haydite surface provides an ideal mechanical bond.



BEACONSFIELD GOLF CLUB, BEACONSFIELD, QUEBEC. Barott & Blackader, Architects
Stucco Applied to Haydite Unit Masonry Walls. Partitions and Floors also of Haydite Construction

Properties of Haydite Building Units

SAVING IN COST

Purely from the standpoint of economy of construction and maintenance, the advantages of Haydite Building Units may be summarized as follows:

Economy of Laying Being the lightest weight fire-resistant material available, Haydite Units enable a substantial saving in masonry labor. The convenient size of units, their trueness and their wide mortar bed make for unusual speed of laying.

Mortar Saving Since one 8 x 8 x 16" Haydite Building Unit replaces 12 standard brick or 2.1 hollow tile (5 x 8 x 12"), a large reduction is made in the mortar materials and labor.

Cost of Units The Haydite Building Units themselves are low in cost, especially when their unique combination of properties is considered. Breakage of units in handling is negligible.

Plastering Economy The trueness of Haydite Unit walls and their ideal qualities as a plaster base reduce both labor and amount of plaster.

Elimination of Lath By plastering directly on Haydite Building Units, the entire expense of lathing and furring is done away with.

Nailing and Cutting Wood trim can be nailed directly to the units, eliminating the expense of placing nailing plugs in the wall. Cutting and channelling is handled speedily without danger of breakage.

The light weight, convenient size and uniform trueness of Haydite Building Units make them easy to handle and speedy to lay up in the masonry wall.



Elimination of Special Insulating Materials Haydite Units make the use of special thermal or sound insulation unnecessary, for they combine insulation and structural properties in one material.

Dead Load Owing to the lightness of the unit, the dead load of the wall is reduced, resulting in a substantial saving in load bearing members of skeleton construction.

Low Maintenance The permanence of Haydite Unit construction insures a minimum of repairs to plaster, etc. Heating costs are reduced by the high insulating value of the wall. Savings in insurance are made by the use of Haydite construction in place of less fire resistant types.



NORTHEAST JR. HIGH SCHOOL, KANSAS CITY, MO.
Chas. A. Smith, Archt., George E. McIntyre, Engineer
Haydite Building Units Used for Backup



WADHAM'S OIL COMPANY SERVICE STATION
Riverside, Illinois
Haydite Building Units Used for Backup and Partitions

SIMPLICITY OF

With Light Weight Haydite Building Units

There is nothing about Haydite Building Units that requires any special methods of construction or unusual types of structural design. The shapes and sizes are supplied in accordance with both practical experience and research work. Their use in masonry construction is in reality a much simplified process and one which involves no special qualifications on the part of masons and other building mechanics. Indeed, the trueness and uniformity of Haydite Building Units and the simplicity of their use help to offset the human element in building, and insures a superior wall without unusual precautions.

Load Bearing and Partition Walls

All types of exterior and interior walls, load bearing or non-load bearing can be laid up quickly and easily with Haydite Standard Units as is shown in the details given on following pages. It is possible to handle intricate construction problems without difficulty because of the full range of unit styles, types and sizes that are furnished.

All units should be laid in the wall with cells vertical, and in such a manner that the main bearing webs come in proper relation for bearing on those below. A point to be emphasized is the wisdom of using an interrupted mortar joint. No joints should be mortared through the walls, but liberal air spaces should be left in the center of the walls by buttering the two edges of each unit on both horizontal and vertical joints. This gives a much

superior wall, and also saves mortar. Special joist blocks facilitate the setting of joists into the wall.

Backing Up Brick, Stone, etc.

Brick, stone, and similar facing materials are easily and effectively bonded to the Haydite Unit backing. As shown on the details on page 20, this may be handled by means of metal wall ties, Haydite Header Brick, or Haydite Header Units.

Bonding Corners

For this purpose square end Haydite Building Units are supplied in all sizes. The masonry treatment is most simple, as shown by the detail on page 21.

Windows and Openings

Here, again the construction is simple. Haydite reinforced lintels, square-end units, jamb blocks and special grooved units for steel windows enable the contractor to handle any type of opening or sash installation. Typical details are shown on pages 20-22.

Foundation Walls

Haydite Building Units are widely used for foundation walls, and for this purpose entail no special provisions that do not apply to ordinary concrete masonry construction. Details are shown on pages 21 and 22.



APARTMENT BUILDING, EVANSTON, ILL.
Maher & McGrew, Architects
Haydite Building Units Used for Backup



W. E. BIGGERS, AUTO SALESROOMS, BUFFALO, N. Y.
Edward M. Plant, Architect
Haydite Building Units Used for Backup and Partitions

CONSTRUCTION

Applying Wall Finishes

As described on a previous page, Haydite Building Units form a splendid plaster base and when units 8" or more in thickness are used, plastering and stuccoing directly upon the Haydite is emphatically recommended as a means for substantially reducing costs. Where furring and lathing is necessary, the fact that nails can be driven into the units offers a valuable saving. In addition, Haydite Units can be left unplastered when desired, and with mortar joints neatly pointed up, a sprayed paint finish can be applied to the wall with excellent results.

Nailing and Cutting

Nails may be driven through wood trim directly into the Haydite Units, and will hold securely. While units are furnished in a sufficient range of shapes and sizes to make cutting seldom necessary, the units are easily cut or channeled to receive pipes, conduits, etc., and due to the toughness of the units this can be done without danger of damage.

Heavy Load Bearing Columns

Columns and masonry piers are easily built of standard Haydite Building Units, and where they must be designed to bear very heavy loads, special units made of Solid Haydite Concrete are provided to give the necessary strength.

Cold Weather Construction

It is a distinct advantage of Haydite Building Units that they may be used with ease for cold weather building operations. Heating the units to

HAYDITE BUILDING UNIT EQUIVALENTS IN OTHER MATERIALS

12 x 8 x 16" Haydite Building Unit (Weight 37-45 lbs.) replaces 18 common brick, weighing about 81-90 lbs. or 3.2 hollow clay tile 5 x 8 x 12" weighing about 51 lbs.

8 x 8 x 16" Haydite Building Unit (Weight 26-30 lbs.) replaces 12 common brick, weighing about 54-60 lbs. or 2.14 hollow clay tile 5 x 8 x 12", weighing about 34 lbs.

4 x 8 x 16" Haydite Building Unit (Weight 13-17 lbs.) replaces 6 common brick, weighing about 27-30 lbs.

remove frost and to keep the wall warm during the early hardening period of the mortar, together with a few other simple precautions will insure excellent results.

Storage and Protection of Units

To secure the full advantages of Haydite construction, the units should be given suitable protection during the erection of the building. This in particular suggests the shelter of units to insure their dryness when they are set into the wall.

Engineering Services

Both the manufacturers of Haydite and the concrete products plants which make the units offer the services of competent Haydite Specialists for consultation regarding matters connected with the use of Haydite Building Units. These men can supply any required information about Haydite and its performance, and can assist Architects and Engineers in working out unusual structural problems.



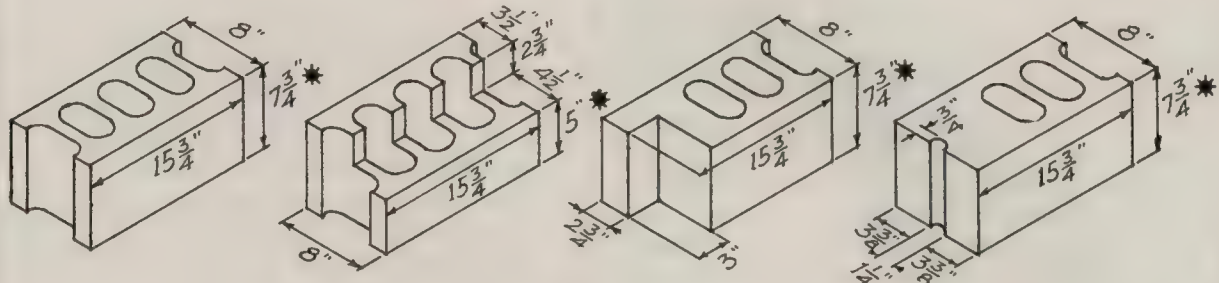
RESIDENCE, ST. LOUIS, MISSOURI
E. A. Felix, Architect
Stucco Applied to Haydite Building Units



CENTRAL POLICE STATION, COLUMBUS, OHIO
Allied Architects Association, Architects
Haydite Building Units Used for Backup and Partitions

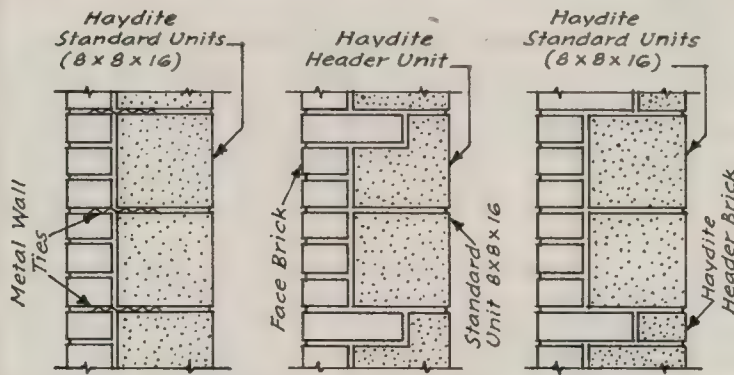
Construction Details

TYPICAL 8" HAYDITE STANDARD UNITS



* Note ~ in Canada, Units are made full 8" in height

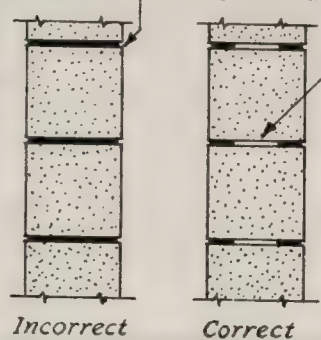
BONDING BRICK AND HAYDITE UNITS



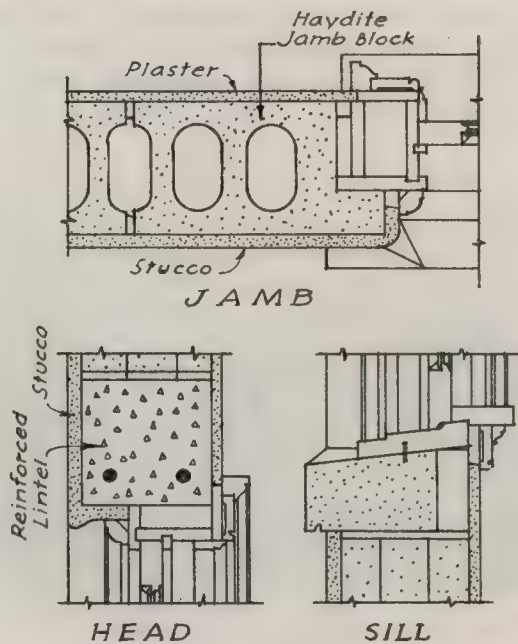
MORTAR JOINTS

Mortar joints extending thru wall, conduct moisture

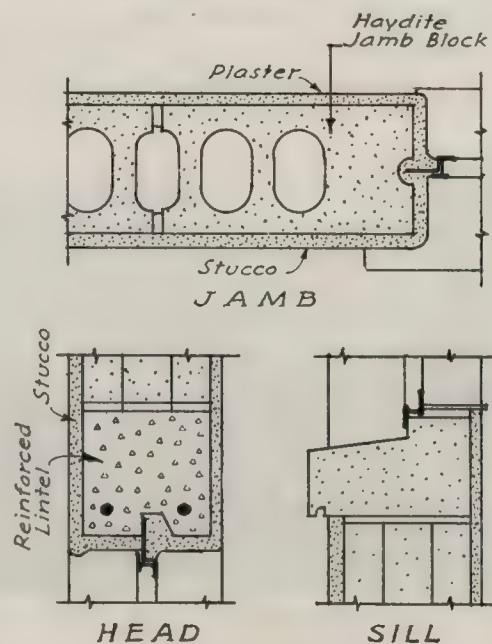
No through joints. Liberal space in center of wall.



DETAIL FOR WOOD WINDOWS

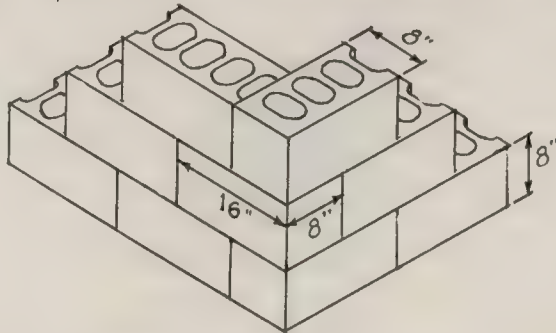


DETAIL FOR STEEL WINDOWS

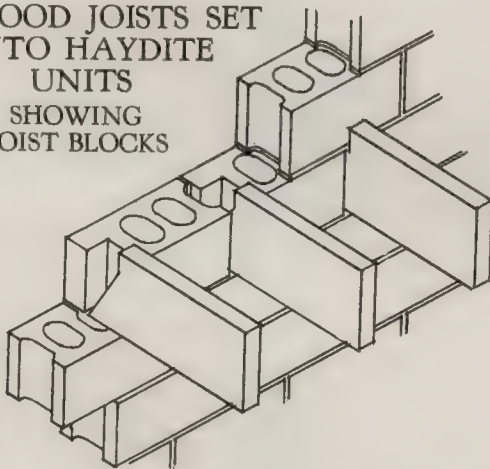


Construction Details

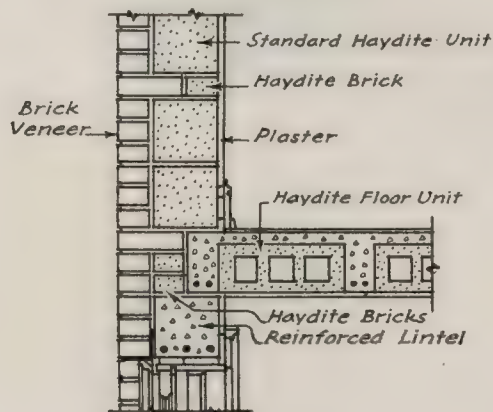
CORNER CONSTRUCTION
SHOWING SQUARE END UNITS



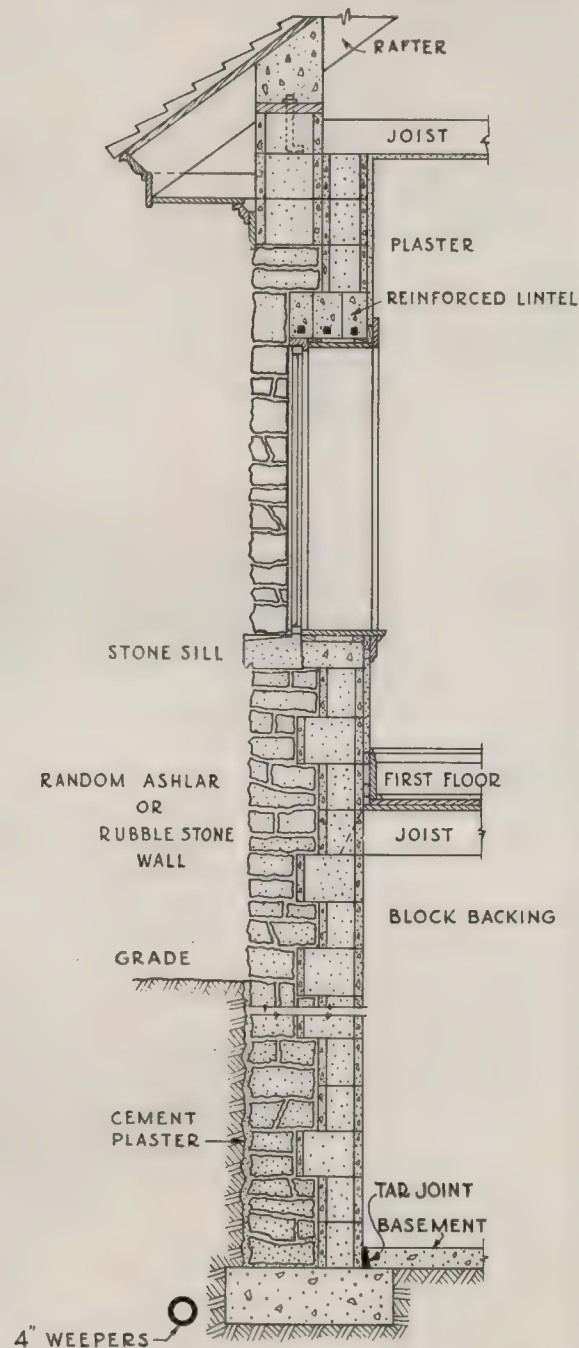
WOOD JOISTS SET
INTO HAYDITE
UNITS
SHOWING
JOIST BLOCKS



TYPICAL LIGHTWEIGHT HAYDITE
UNIT WALL AND FLOOR
CONSTRUCTION



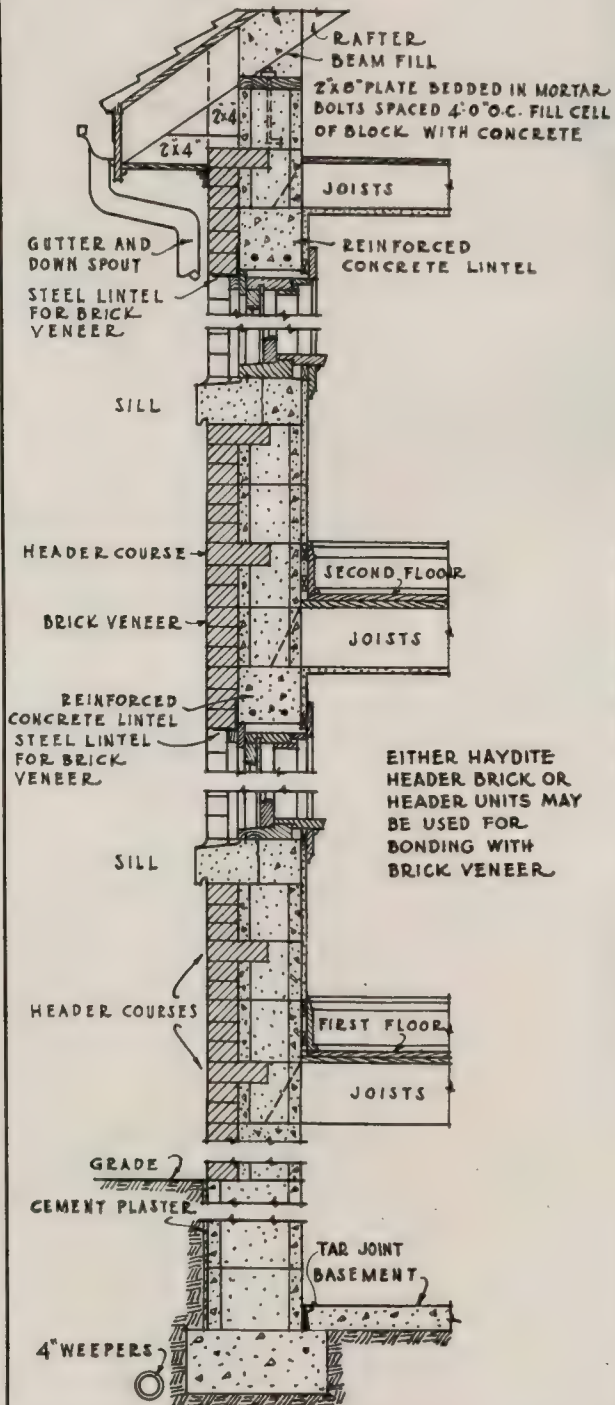
WALL DETAIL—HAYDITE UNITS
WITH STONE EXTERIOR



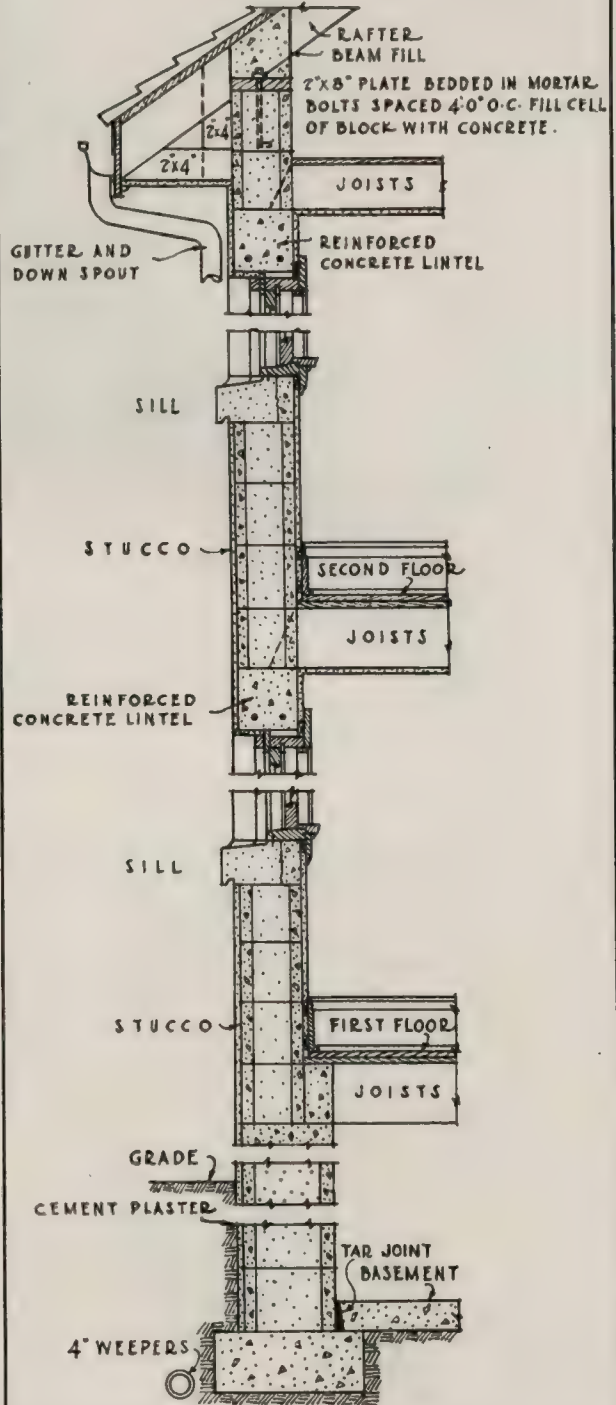
Note: Mortar to be spread between stone and Haydite Unit only; no mortar to be placed on webs, thus breaking through mortar joints.

Construction Details

WALL DETAIL
HAYDITE BUILDING UNITS
WITH BRICK EXTERIOR



WALL DETAIL
HAYDITE BUILDING UNITS
WITH STUCCO EXTERIOR



Suggested Specifications

for Masonry Built of Haydite Building Units

1—Mortar:

Mortar used for setting the units shall be either Portland Cement mortar composed of one part Portland Cement to not more than three parts of clean, sharp sand with an allowable addition of hydrated lime not to exceed 15% of the cement by volume, or cement lime mortar mixed in proportions of one part cement, one part slaked lime (lime putty) or dry hydrated lime and not more than six parts of sand, all by volume.

The lime and cement shall be thoroughly mixed together before adding the sand and water. The mortar so mixed shall be used within thirty minutes after mixing and no retempering shall be permitted.

2—Laying:

All units shall be laid with cells vertical in the wall in such a manner that the main bearing webs come in proper relation for bearing with the units below.

All mortar joints in the units shall extend into the wall but $1\frac{1}{2}$ inches from inner and outer faces, leaving the center of the wall clear of mortar, to prevent conduction of moisture to the inner face of wall through a continuous mortar joint.

3—Foundation Walls:

Foundation walls and piers shall be built of units of such size as specified by the architect or owner and in conformity with the local building code. Special units shall be used for corners, offsets and other breaks to maintain a proper bond and insure staggered joints the entire length of wall.

In damp ground, water bearing soil, springs or where excessive ground water occurs, the outside foundation walls shall be plastered with a mortar composed of one part cement to two parts of sand applied three quarters of an inch thick.

Where an unusual amount of ground water is present, a drain shall be laid around the foundation to carry the ground water to the storm sewer or other available outlet.

4—Exterior and Interior Bearing Walls:

All exterior and interior bearing walls above the foundation shall be built to the wall thickness shown on the drawings, forming all corners, returns and offsets as shown and using the required shapes and sizes to work to corners and openings and maintain a proper bond throughout the length of the wall.

Special jamb blocks shall be used for double-hung window frames.

Pre-cast reinforced Haydite Concrete Lintels shall be used over all openings, being placed in the walls over such openings as indicated on the drawings. Haydite lintels so used shall have a modulus of rupture of 800 pounds per square inch.

Where arches occur in the wall they shall be built of standard Haydite Units if of large radii; or if small radii they shall be laid up of two or more courses of Haydite Brick laid in rowlock on wooden or steel centers.

5—Use of Haydite Units in Bearing Walls:

The design and size of hollow Haydite Building Units in bearing walls shall be such that the gross cross sectional area of the unit is not stressed greater than one-tenth of the crushing strength of the particular units used, as shown by proper tests of such units.

The superimposed loadings shall include dead and live loads of floors and roof plus the weight of walls and in no case shall the units be subjected to tensile stress unless provision is made for suitable reinforcing with steel bars.

Where heavy beams, girders or joists are placed on walls built of the unit or where other concentrated loads are applied, the holes or cores shall be filled with concrete or the wall may be capped with concrete to properly distribute the load. Solid units may be used in the course of units upon which such beams, girders or joists have their bearing instead of filling the holes or cores with concrete.

6—Partition Walls:

All Haydite Building Units are of such compressive strength that they may properly be classed as bearing units, no units lower in compressive strength are made. Units used in partitions, whether bearing or non-bearing must be laid to a true line and plumb and tied into other walls; also, wedged against the floor above.

7—Columns and Piers:

Columns and piers shall be built of such size units as to conform to the dimensions on the drawings.

Where heavy loads are carried on the columns and piers, they shall be built of solid Haydite Building Units instead of the standard hollow type unit.

8—Chases and Openings:

The mason contractor shall leave all chases and openings required by other trades and shall build in all anchors or other accessories furnished by others. Chases and openings that are cut into the Haydite walls shall be covered with expanded metal or metal lath, nailed directly to the Haydite Unit, when ready for plastering.

Horizontal chases will not be permitted in the walls except chases of small area for flexible conduits for electric wires.

9—Plaster:

Plaster may be applied direct to Haydite Building Units providing the units have been laid in the wall in compliance with Section No. 2 of these specifications which provide that the center of the wall shall be clear of mortar and further provided that the units be thoroughly dried in the wall before applying plaster.

Owing to the great insulating properties of Haydite, the surface of the unit will appear dry while the interior retains moisture. To prevent this interior moisture from coming to the surface and discoloring the plaster, it is necessary for the unit to be dry throughout before applying plaster.

Owing to its limited capillarity the unit will not conduct moisture from the outer to the inner surface but a through mortar joint will draw moisture through the wall to the inner surface.

Sound Deadening Walls of

**Combining Acoustical Correction with Cost Reduction—
for Auditoriums, Gymnasiums, Assembly Rooms, Factories, etc.**

Efficient sound deadening can now be obtained, not merely without additional cost but *at an actual saving* through the use of unplastered Haydite Building Units. This important fact has caused the very wide adoption of Haydite Units for the interiors of churches, auditoriums, recreation halls, assembly rooms, gymnasiums, institutional dining rooms, armories, bowling alleys, industrial plants, etc., combining excellent control of sound with a fire-safe wall of pleasing appearance.

Unexcelled Acoustical Properties

The natural surface of Haydite Building Units gives them the highest coefficient of sound absorption of any fire resistant masonry material—and one of the highest in any class. This extraordinary fact is due to the characteristic cellular structure of Haydite and is proved by tests made by leading authorities in the acoustical field.

Special Materials Unnecessary

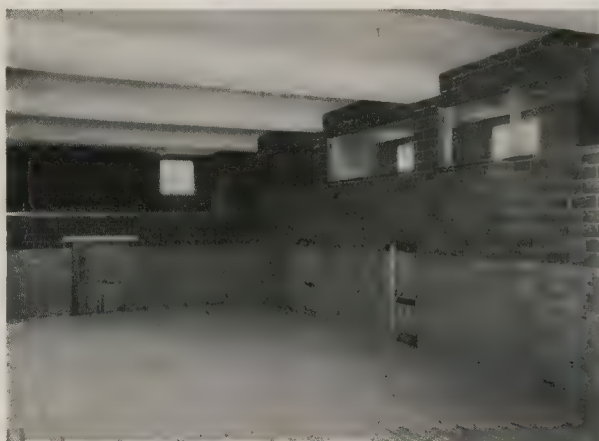
When acoustical correction is carried out by means of special materials, cost is invariably a big element and there is often much to be desired from the standpoint of fire safety and maintenance expense. With Haydite Acoustical Walls all this is unnecessary. There is no extra cost; there is

DATA ON THE SOUND ABSORPTION OF VARIOUS MATERIALS

The following figures represent the coefficients of sound absorption of a number of materials. They represent data obtained by the Reverberation Method at Pitch 512, the standard of efficiency being taken as an open window, with a coefficient of 1.00 or 100 percent absorption. Information is taken from published records by Paul E. Sabine, Ph. D. of the Riverbank Laboratories, Geneva, Illinois, unless otherwise stated.

Material	Coefficient of Sound Absorption
Haydite Units, Unpainted.....	.370
Plain Concrete.....	.015
Clay Brick, Unpainted.....	.025
Clay Tile, Painted.....	.025
Marble*.....	.010
Plaster on Tile*.....	.025
Plaster on Wood Lath, Rough Finish.....	.039
Plaster on Wood Lath, Smooth Finish.....	.032
Acoustical Plaster A*.....	.140
Acoustical Plaster B*.....	.160
Acoustical Plaster C*.....	.210
Cane Fibre Board*.....	.25 to .30
Semi Stiff Flax Fibre Board ½".....	.340
Draperies hung straight in contact with wall, cotton fabric 10 oz. sq. yd.....	.11
Draperies same as above, Velour, 18 oz. sq. yd.....	.35
Draperies, Velour, 18 oz. sq. yd., hung 4 in. from wall.....	.44

*From the University of Illinois.



AUDITORIUM, GRACE REFORMED CHURCH, BUFFALO, N. Y.
Charles W. Bolton, Architect

Unplastered Acoustical Walls Built of Colored Haydite Building Units

no special engineering to be done. The acoustical treatment is all in the simple fire-resistant masonry wall—and that this is highly efficient is shown by the data quoted on these pages.

Building Costs Reduced

The Haydite Acoustical Wall is made of standard Haydite Units laid in the usual way with mortar joints neatly pointed up. The wall is left unplastered, thus effecting a big reduction in building cost. Because of the good color and the uniformity of the units, the wall appearance is pleasing and satisfactory even without decorating. *No special design or engineering features enter into the construction.*

Unplastered Haydite Units

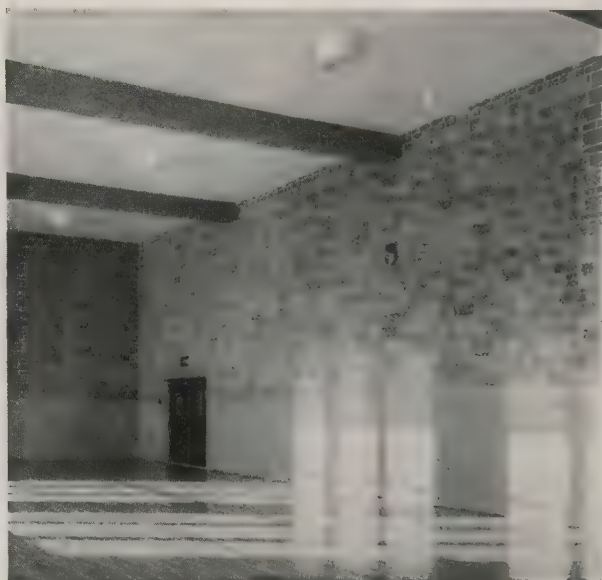
Decorative Treatment

Haydite Acoustical Walls have a pleasing natural surface texture to which decorative treatment may be applied in several ways, all of which are inexpensive and satisfactory. The most popular method is painting. When this is to be done a recognized concrete paint should be used—one which, when set, is impervious to water, fire or the elements. (Paint made with oil, turpentine, or commercial dryers should be avoided.) The best results will be secured by spraying. This treatment does not appreciably affect the sound absorbing qualities of the Haydite Wall.

In addition, the Haydite Units are at times colored during their manufacture, thus giving a very attractive wall without any other treatment. Good effects have also been secured through the use of special Haydite Units with ground or buffed surfaces.

Ashlar Unit Walls

Very interesting interior effects are secured with Haydite Ashlar Unit Walls. In this case a combination of standard and special size Units is used. The result is best shown by the accompanying illustration.



THOS. A. EDISON SCHOOL, DEARBORN, MICHIGAN
Geo. D. Mason & Co., and H. C. Vicary, Assoc. Archts.
Showing Haydite Random Ashlar Unit Walls



LOCKER ROOM, DANVILLE, (ILL.) COUNTRY CLUB
Liese & Ludwig, Architects
Haydite Unit Acoustical Wall Treatment



VITORI BOWLING ALLEYS, CLAIRTON, PA.
C. R. Moffitt, Architect
Haydite Unit Acoustical Wall Treatment



MICHIGAN NAVAL RESERVE ARMORY, DETROIT
Stratton & Hyde, Architects
Acoustical Walls of Painted Haydite Building Units

Saving Dead Floor Loads

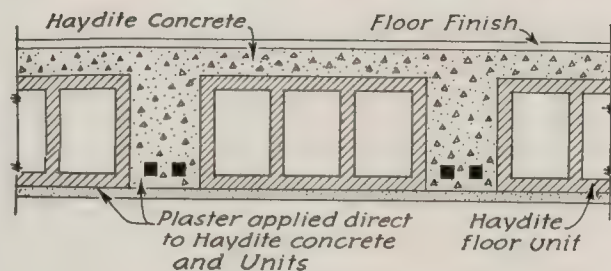
The same properties which make Haydite Building Units ideal for masonry wall construction also offer advantages in light weight fire proof floor construction. Standard precast Haydite Floor Units are provided for fillers and these may be used either with ordinary or, preferably, with Haydite concrete. Haydite Floor Units are being used in a large variety of building types and are successful not only because of their light weight and economy, but on account of their sound-thermo insulating value.

Standard Units

The sizes and styles of Haydite Floor Units vary according to the manufacturer. A typical line is composed of the following:

- 4 x 9 x 16" Units.....weight, 13 lbs.
- 6 x 9 x 16" Units.....weight, 18 lbs.
- 8 x 9 x 16" Units.....weight, 20 lbs.

Other manufacturers supply Haydite Floor Units 8 x 16" in heights from 4" to 8". There is also some variation in shape, number of cells and percentage of core space, and for this reason definite information on weights, construction details, etc., will be supplied by the local Haydite manufacturer on request. In all cases, the products



The Haydite Weight-Saving Floor System, showing Haydite Floor Units used with Haydite Lightweight Concrete—a combination which reduces dead load from 25 to 40% as compared with ordinary tile joist construction.

conform to the highest specifications and regulations, just as do the standard Haydite Building Units.

Reduced Dead Load

As one would expect, the use of Haydite Floor Units effects a marked decrease in the dead load. Complete data on this subject will be supplied by the Haydite manufacturer in your district, but as a general indication it may be said that Haydite Floor Units used with Haydite Concrete slab floors run from 25 to 40% lighter than ordinary tile joist construction.



INDEPENDENCE HOSPITAL & SANITARIUM, INDEPENDENCE, MO.

H. C. Smith, Architect; F. L. Brown, Engineer

42,000 Haydite Floor Units Used in Construction; also Haydite Unit Masonry and Partition Walls

With Haydite Floor Units

Superior Features

In addition to saving in weight, Haydite Floor Units offer a number of other important advantages, which may be summarized as follows:

Economy of Construction. The large, light units are easy to handle and reduce the number of ribs used in ordinary construction.

Sound Insulation. Haydite Floor Units have a higher sound-insulating efficiency than any other comparable materials. This one advantage alone has caused the adoption of Haydite Floor Construction in many fine buildings.

Heat Insulation. As demonstrated by many tests, Haydite Units offer the best heat insulation of any material of their class.

Fire-Safety. The fire resistance of Haydite Units and Haydite Concrete is completely established by authoritative tests.

Plastering Economy. As Haydite Floor Units form a splendid plaster base, a suspended ceiling is unnecessary, and plaster may be applied directly to the units, lessening the danger of streaks or shadows in the ceiling. This feature means a substantial economy.

Uniformity of Units. Haydite Floor Units are true and uniform, for they are made under rigid specifications.



CHIROPRACTIC PSYCHOPATHIC SANITARIUM
DAVENPORT, IOWA
Lightweight Haydite Unit Floor System

Low Breakage. Haydite Floor Units are tough and strong and the breakage during handling and construction is far lower than comparable floor fillers.

Data and Service

Complete data regarding Haydite Unit Floor Construction will be supplied by the Haydite manufacturer in your vicinity. This information will be presented by competent Haydite engineers who will give you valuable assistance on your floor construction problem.

Haydite Lightweight Concrete Floor Fill

Where a concrete floor fill is necessary to cover conduits, pipes, etc., use Lightweight Haydite Insulating Concrete Floor Fill. This form of construction has been adopted in many splendid buildings. No special equipment or expert handling is required, for Haydite Concrete is mixed, placed and cured the same as ordinary concrete.

Saving in Dead Load

Haydite Concrete for sub floors or floor fills has the unusually low weight of approximately 60-75 lbs. per cubic foot, while offering ample compressive strength. Compare this feature with ordinary concrete and the saving in dead load will be apparent at once.

Sound and Heat Insulation

The cellular composition of Haydite aggregate gives the concrete a sound-thermo insulating value that is truly extraordinary. For Haydite Concrete

of 74 lb. density the coefficient of heat transmission as determined by The Thompson & Lichtner Co., Inc., Engineers, Boston, is 1.82 B. T. U.'s per sq. ft., per hour, per-inch thick, per degree of temperature differential,—which is markedly superior to any comparable material. A similar superiority applies to sound insulation. (See page 13)

Other Advantages

Haydite Concrete Floor Fill is at a further advantage in that pipes, conduits, etc., may be embedded in the concrete without danger of corrosion, for Haydite is chemically inert and contains nothing which will have an injurious effect on metals.

Specifications and Data

Complete data and specifications for Haydite Concrete Floor Fill will be supplied by the manufacturers on request.

Haydite Pre-Cast Roof Tile

One of the most successful uses of Haydite Aggregate is in the manufacture of Pre-Cast Concrete Roof Decks. These are widely used throughout the United States and Canada in industrial plants, public utilities, schools, public buildings, theatres, railroad buildings, armories, hangars, garages and other similar buildings.

The principal advantage of Haydite pre-cast roofs are: (1) Extremely Light Weight (as low as 10 lbs. per sq. ft.), (2) High Insulating Value, (3) Ample Strength, (4) Permanence, (5) Fire-safety, (6) Imperviousness to Water, Smoke, Fumes, Steam, etc., (7) Speed of Erection in Any Weather, (8) Saving in Steel Used to Support Roof, (9) Perfect Base for Composition Roofing, (10) No Maintenance Expense, and (11) Attractive Appearance (underside can be used as ceiling). Haydite Roof Tile are made in standard shapes and sizes by reliable authorized manufacturers who specialize in this work. Complete data and engineering information supplied upon request.



BOARD OF EDUCATION ADMINISTRATION BLDG., CLEVELAND
Haydite Insulating Concrete Roof Slabs by
The Geo. Rackle & Sons Co., Cleveland



SHEDD AQUARIUM, CHICAGO
Haydite Nailing Concrete Roof Slabs by the
Federal-American Cement Tile Company



MCINTYRE PORCUPINE MINES, SCHUMACHER, ONTARIO
One of Six Buildings with Haydite Pre-cast Roof Slabs by
The Cooksville Co., Ltd., Toronto



200,000 Sq. Ft. of HAYDITE INSULATING CONCRETE ROOF SLABS ON THE DETROIT MUNICIPAL AIRPORT HANGAR
Manufactured and Erected by the *Federal-American Cement Tile Company, Chicago*

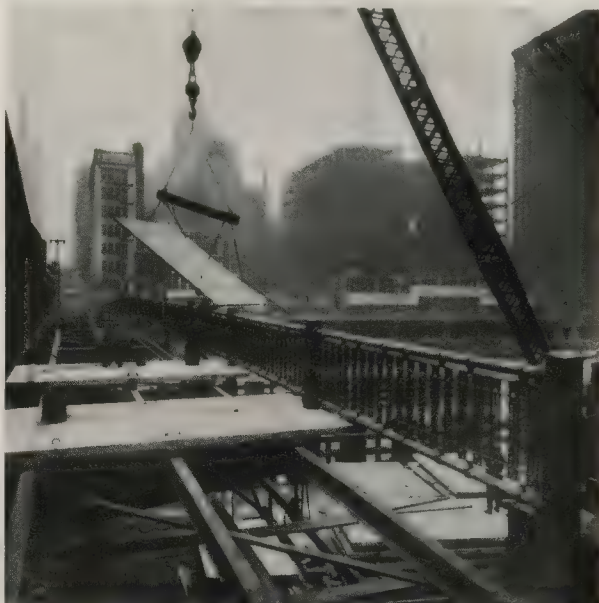
Special Haydite Products

In the development of pre-cast building specialties, manufacturers have naturally turned to Haydite as the ideal aggregate. Just as concrete pre-cast under scientific factory conditions is superior to that poured in the field, Haydite Concrete, because of its uniformity, light weight, and other desirable properties is superior to that made with ordinary aggregate. Haydite Pre-Cast Specialties therefore have offered the solution for a large variety of construction problems, a few of which are illustrated here. Information regarding these or other Haydite Concrete specialty products will be supplied upon request.



CANADIAN NATIONAL RAILWAY VIADUCT, BRACEBRIDGE, ONT.
Chas. P. Disney, Bridge Engineer

Haydite Pre-cast Concrete Saved 68 Tons Dead Load



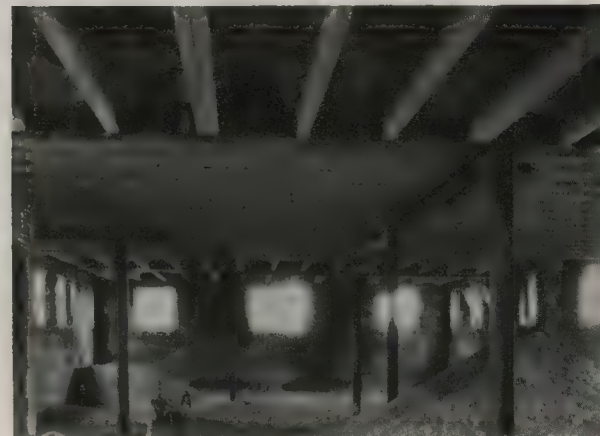
CLARK STREET BRIDGE, CHICAGO
Haydite Pre-cast Concrete Floor Slabs



HAYDITE CONCRETE STONE TRIM
Algonite Stone Co., Oklahoma City, Mfrs.



LIFT BRIDGE OVER WELLAND CANAL (One of Fifteen)
Haydite Pre-cast Concrete Floor Slabs



PINECREST HOSPITAL, KALAMAZOO, MICH.
Lith-I-Bar Pre-cast Haydite Concrete Joists

Reducing Dead Loads With

Haydite concrete has attracted the universal attention of engineers and architects because it has solved one of the severest problems of building construction—*reduction of dead load without sacrifice of structural soundness*. Haydite concrete is the equal of ordinary natural aggregate concrete in strength, durability, and all other physical qualities. It is demonstrably superior to ordinary concrete in many properties,—as proved both by laboratory tests and practical field experience. And yet, it *weighs approximately 33⅓% less!*

Owing to these advantages, the use of Haydite Concrete has resulted in substantial savings in steel framework, and has reduced costs in structures of both reinforced concrete and steel skeleton types. In many cases the extreme lightness of Haydite Concrete has made it possible to increase the number of additional stories that could be added to older buildings.

Advantages of Haydite Concrete

Light Weight. All Haydite Concrete weighs 90-100 lbs. per cu. ft. and Haydite-and-natural-sand concrete 100-112 lbs. per cu. ft., as compared with ordinary concrete at 145-150 lbs.

Strength. Haydite Concrete, by unbiased tests, is shown to have at least as great strength as natural aggregate concrete.

Uniformity. The absolute control of the manufacture and grading of Haydite aggregate assures uniformity in the resulting concrete.



THE T. EATON COMPANY, LTD., MONTREAL
Ross & Macdonald, Architects

Featherweight Haydite Concrete Construction permitted the addition of three stories without altering the original foundations



VICTOR F. LAWSON MEMORIAL Y. M. C. A., CHICAGO
Perkins, Chatten & Hammond, Architects
Frank A. Randall, Structural Engineer

Haydite Concrete used in floor system and fireproofing the steel frame, saving 14 lbs. dead load per sq. ft. of floor area

Fire Resistance. Completely established by the National Board of Underwriters and U. S. Bureau of Standards. Haydite has no combustible content.

Sound-Thermo Insulation. Haydite concrete leads all comparable materials in these two qualities.

Durability. Repeated thawing and freezing tests prove that Haydite Concrete will not deteriorate under severe weather conditions.

Construction Economy. Contractors who have had experience with Haydite Concrete will testify to the economy with which it may be mixed and handled on the job. No special equipment is necessary.

Clean; Non-corrosive. Haydite is clean and free from impurities, and contains no chemical substances which will corrode metal or cause other injury.

Data and Service

Space does not permit the inclusion of data on Haydite concrete construction in this book. However, full information on this subject is available, including the results of many tests and engineering computations. This data will be supplied upon request. You are also invited to consult with our staff of Haydite engineers.

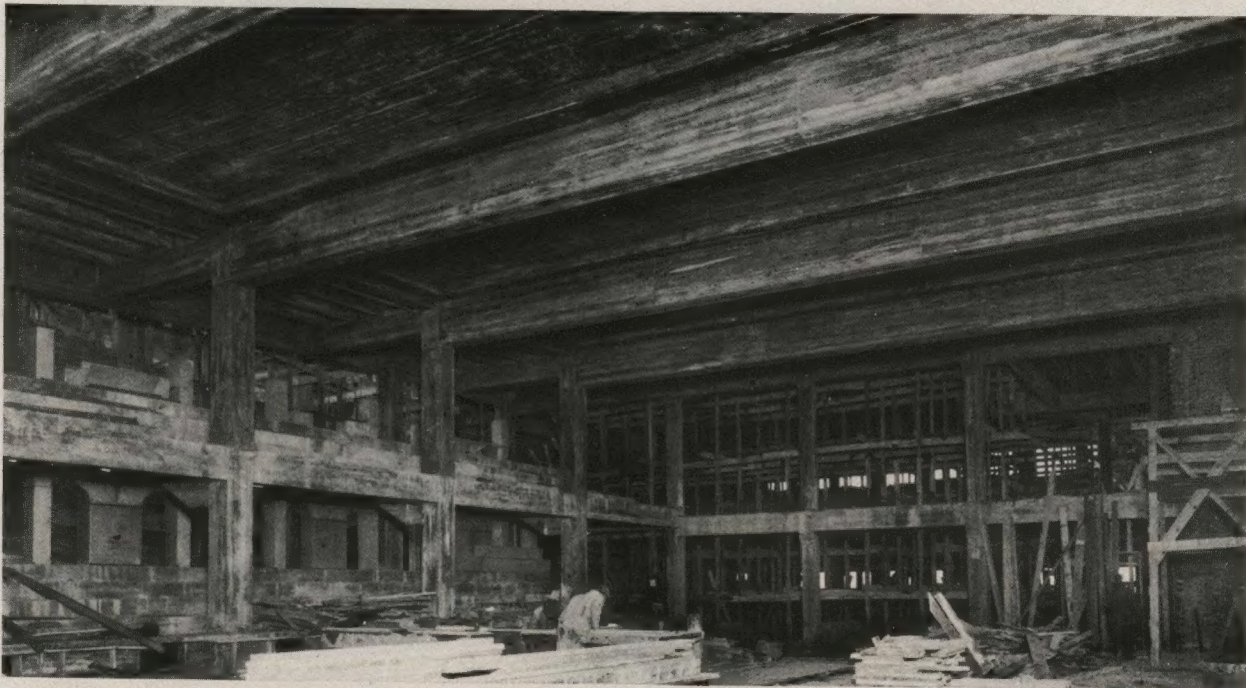
Haydite Structural Concrete



KANSAS CITY POWER & LIGHT BLDG., KANSAS CITY, MO.
 Hoit, Price & Barnes, Architects. C. A. Glass, Structural Engineer
 Haydite Concrete Superstructure and Floor System with Haydite
 Pre-cast Floor Tile Fillers



PARK PLAZA HOTEL, ST. LOUIS, MO.
 L. O. Schopp, E. J. Bauman, Associated Architects.
 Brussel & Viterbo, Structural Engineers
 Haydite Concrete Used for all Fireproofing and Floor Construction

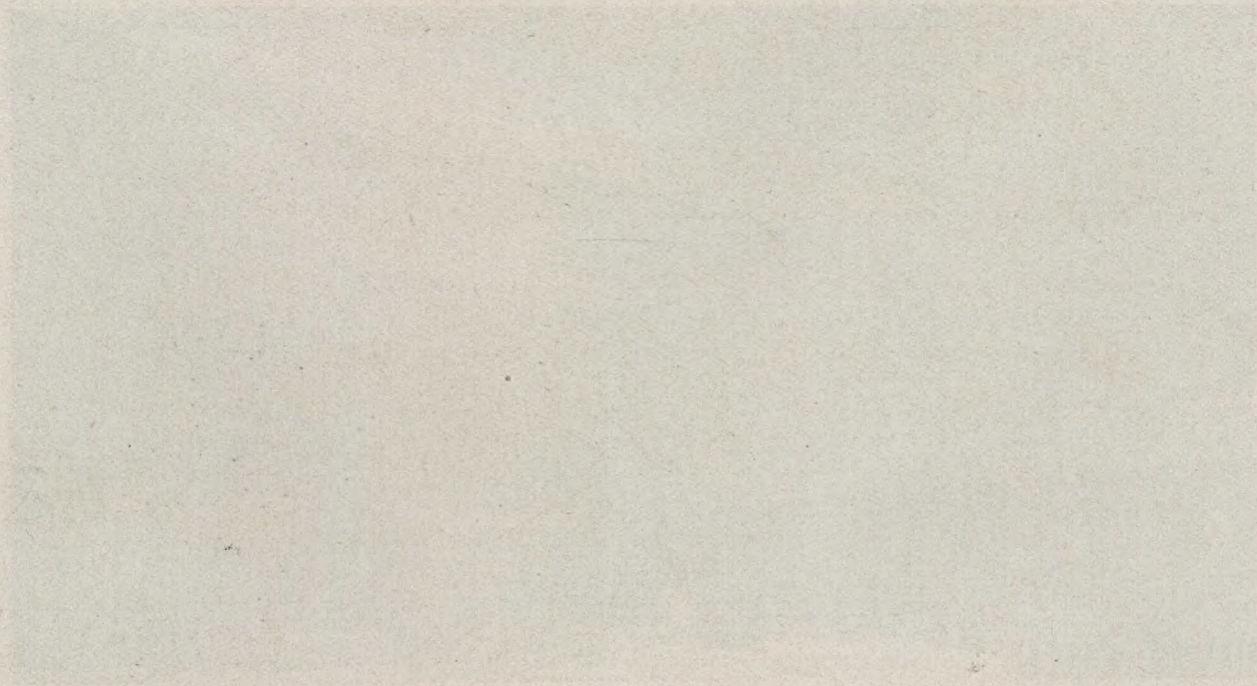


Chas. A. Smith, Architect

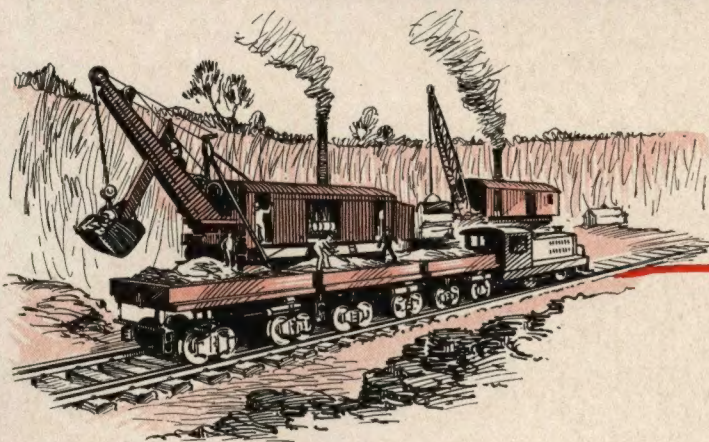
AUDITORIUM, CENTRAL JUNIOR HIGH SCHOOL, KANSAS CITY, MO.
 Note the Haydite Reinforced Concrete 60-ft. Clear Girder Spans

Geo. E. McIntyre, Engineer

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION
PUBLISHED WEEKLY
CHICAGO, ILL., U.S.A.



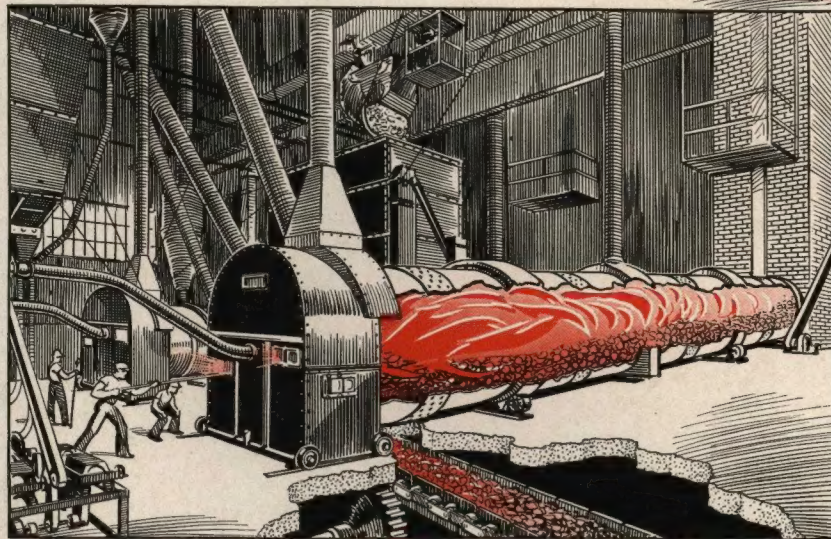
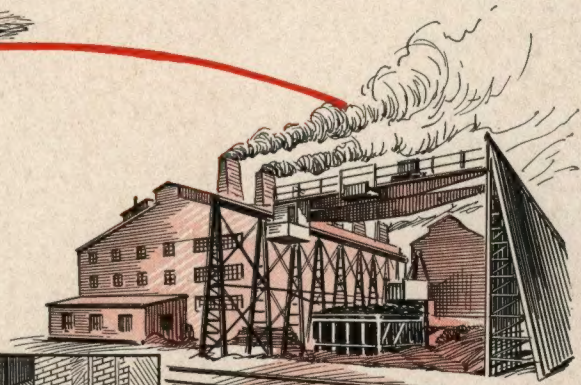
How HAYDITE Is Made



The Raw Material of which Haydite is made is clay or shale of the type used in the manufacture of high grade brick. The material is taken from certain specially tested deposits, for not all clays or shales have the necessary qualities, and is the only raw material used.

The unique properties of Haydite, the Lightweight Aggregate, are better appreciated when its methods of manufacturing are understood. In this the particular features are: first, the quality and purity of the raw material, second, the special expansive burning treatment, carried on at over 2000 degrees Fahrenheit, and finally, the absolute uniformity and control over the material and the processes to which it is subjected.

Here, in brief, is the story:



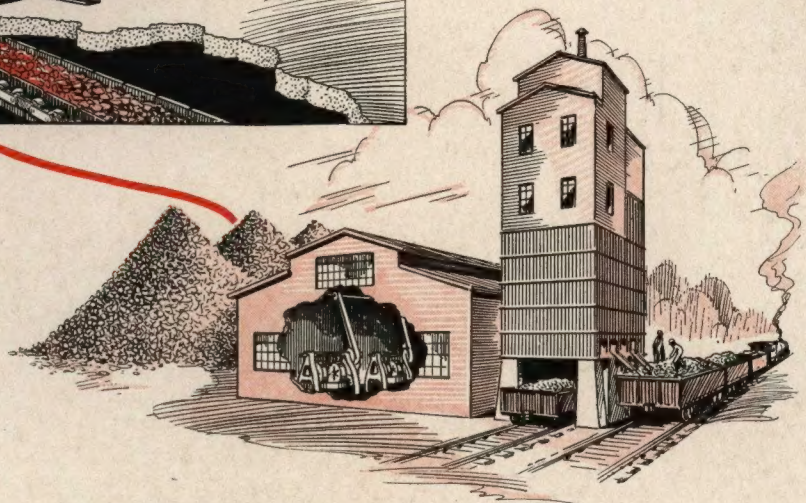
Manufacturing Processes

begin with the crushing of the raw material to a workable size. The clay or shale, after being taken from the bank, is delivered directly to the Haydite plant where it is put through crushing machines to reduce it to a proper fineness. Travelling by automatic conveyors, it is then introduced into rotary kilns of substantially the type used for the manufacture of Portland Cement.

Expansive Burning Treatment.

The raw material travels progressively through the kiln as it is revolved, passing through a preliminary heating stage and finally reaching a zone of highest heat near the discharge end of the kiln. Here the kiln temperature is over 2000 degrees Fahrenheit. As the material reaches this zone of greatest heat, it becomes viscous; it reaches a state of incipient fusion. Gas is liberated from the gas producing substances in the raw material and by this process the material is caused to expand.

This process produces an inert and light weight material of cellular structure, the cell walls of which are vitrified clay or shale. The expansion is so complete and uniform that even the finest particles show an ideal cellular structure when magnified.



Grinding. As the material is discharged from the kiln it is allowed to cool, and is then conveyed to large rotary crushing machines which reduce it to usable size under automatic control.

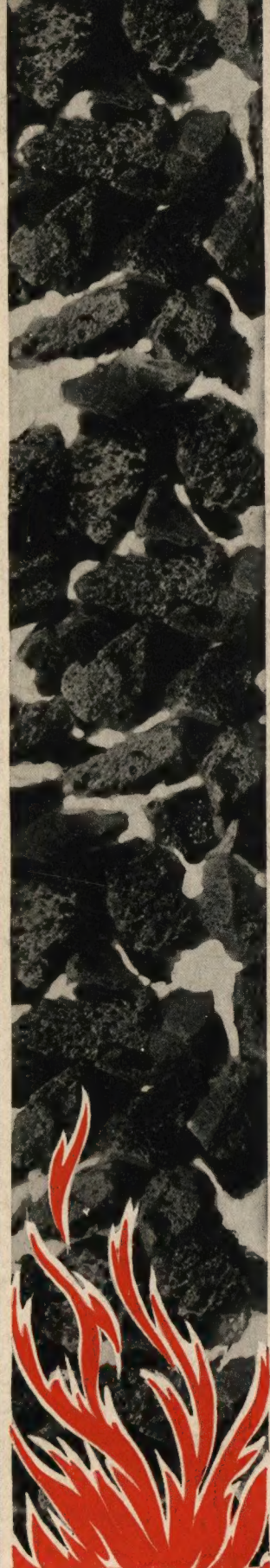
Screening and Grading of the material is then carried on in special machinery—again under automatic control—which delivers the finished product, Haydite, accurately graded into all of the standard commercial sizes used in concrete.

● **Absolute Uniformity from Raw Material to Finished Product** ●

HYDRAULIC-PRESS BRICK COMPANY

**SAINT LOUIS, MISSOURI
SOUTH PARK, OHIO**

***Licensed Manufacturers
of HAYDITE—
the Lightweight Aggregate***



HAYDITE AGGREGATE
is clay or shale
expansively burned at
over 2000° Fahrenheit
—light weight, uniform,
completely cellular
and chemically inert.
(actual micro-photograph)